E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 223 and 224

[Docket No. 230206-0036; RTID 0648-XR124]

Endangered and Threatened Wildlife; 90-Day Finding on a Petition to List Olympic Peninsula Steelhead as Threatened or Endangered under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: 90-day petition finding, request for information, and initiation of status review.

SUMMARY: We, NMFS, announce a 90-day finding on a petition to list Olympic Peninsula (OP) steelhead (*Oncorhynchus mykiss*) as a threatened or endangered distinct population segment (DPS) under the Endangered Species Act (ESA) and to designate critical habitat concurrently with the listing. We find that the petition presents substantial scientific and commercial information indicating the listing may be warranted. We will conduct a status review of OP steelhead to determine whether listing is warranted. To ensure that the status review is comprehensive, we are soliciting scientific and commercial information pertaining to this species from any interested party.

DATES: Scientific and commercial information pertinent to the petitioned action must be received by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: You may submit data and information relevant to our review of the status of Olympic Peninsula Steelhead, identified by "Olympic Peninsula Steelhead Petition (NOAA-NMFS-2022-0137)," by either of the following methods:

- *Federal eRulemaking Portal*: Go to *https://www.regulations.gov* and enter NOAA-NMFS-2022-0137 in the Search box. Click the "Comment Now" icon, complete the required fields, and enter or attach your comments.
- *Mail or hand-delivery*: Protected Resources Division, West Coast Region, NMFS, 7600 Sand Point Way NE, Seattle, WA 98115. Attn: Laura Koehn.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on *www.regulations.gov* without change. All personal identifying information (*e.g.,* name, address, *etc.*), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter "N/A" in the required fields if you wish to remain anonymous).

Electronic copies of the petition and other materials are available from the NMFS website at *https://www.fisheries.noaa.gov/endangered-species-conservation/candidate-species-under-endangered-species-act.*

FOR FURTHER INFORMATION CONTACT: Laura Koehn, NMFS West Coast Region, at *laura.koehn@noaa.gov*, (206) 300-8127; or John Rippe, NMFS Office of Protected Resources, at *john.rippe@noaa.gov,* (301) 427-8467.

SUPPLEMENTARY INFORMATION:

Background

On August 1, 2022, the Secretary of Commerce received a petition from The Conservation Angler and Wild Fish Conservancy (hereafter, the Petitioners) to list the OP Steelhead DPS as threatened or endangered under the ESA. The Petitioners also request the designation of critical habitat concurrent with ESA listing. Copies of the petition are available as described above (see **ADDRESSES**, above).

ESA Statutory, Regulatory, and Policy Provisions, and Evaluation Framework

Section 4(b)(3)(A) of the ESA of 1973, as amended (16 U.S.C. 1531 *et seq*.), requires, to the maximum extent practicable, that within 90 days of receipt of a petition to list a species as threatened or endangered, the Secretary of Commerce shall make a finding on whether that petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted, and to promptly publish such finding in the **Federal Register** (16 U.S.C. 1533(b)(3)(A)). If NMFS finds that substantial scientific or commercial information in a petition indicates the petitioned action may be warranted (a "positive 90-day finding"), we are required to promptly commence a review of the status of the species concerned, during which we will conduct a comprehensive review of the best available scientific and commercial information. In such cases, we conclude the review with a finding as to whether, in fact, the petitioned action is warranted, within 12 months of receipt of the petition. Because the finding at the 12-month stage is based on a more thorough review of the best available information, as compared to the narrow scope of review at the 90-day stage, a "positive 90" finding does not prejudge the outcome of the status review.

Under the ESA, a listing determination may address a species, which is defined to also include subspecies and, for any vertebrate species, any distinct population segment (DPS) that interbreeds when mature (16 U.S.C. 1532(16)). In 1991, NMFS issued the Policy on Applying the Definition of Species Under the Endangered Species Act to Pacific Salmon (ESU Policy; 56 FR 58612, November 20, 1991). Under this policy, Pacific salmon populations are considered a DPS, and hence a "species" under the ESA, if it represents an "evolutionarily significant unit" (ESU) of the biological species. The two criteria for delineating an ESU are: (1) It is substantially reproductively isolated from other conspecific populations, and (2) it represents an important component in the evolutionary legacy of the species. On February 7, 1996, NMFS and the U.S. Fish and

Wildlife Service (USFWS) adopted a joint policy for recognizing DPSs under the ESA (DPS Policy; 61 FR 4722). The DPS Policy adopted criteria similar to those in the ESU Policy for determining when a group of vertebrates constitutes a DPS: the group must be discrete from other populations; and it must be significant to its taxon. A group of organisms is discrete if it is "markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, and behavioral factors." Significance is measured with respect to the taxon (species or subspecies).

NMFS used the ESU Policy to define the OP steelhead ESU in 1996 (61 FR 41541, August 9, 1996). In 2006, NMFS changed its previous practice of applying the ESU Policy to delineate species of *O. mykiss*, however, and instead applied the joint DPS Policy (71 FR 834, January 5, 2006). NMFS determined that the use of the ESU Policy—originally intended for Pacific salmon—should not continue to be extended to *O. mykiss*, a type of salmonid with characteristics not typically exhibited by Pacific salmon.

A species, subspecies, or DPS is "endangered" if it is in danger of extinction throughout all or a significant portion of its range, and "threatened" if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (ESA sections 3(6) and 3(20), respectively, 16 U.S.C. 1532(6) and (20)). Pursuant to the ESA and our implementing regulations, we determine whether species are threatened or endangered based on any one or a combination of the following five ESA section 4(a)(1) factors: (1) the present or threatened destruction, modification, or curtailment of the species' habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms to address identified threats; (5) or any other natural or manmade factors affecting the species' continued existence (16 U.S.C. 1533(a)(1), 50 CFR 424.11(c)).

ESA-implementing regulations issued jointly by NMFS and USFWS (50 CFR 424.14(h)(1)(i)) define "substantial scientific or commercial information" in the context of reviewing a petition to list, delist, or reclassify a species as "credible scientific or commercial information in support of the petition's claims such that a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted." Conclusions drawn in the petition without the support of credible scientific or commercial information will not be considered "substantial information." In reaching the initial (90-day) finding on the petition, we consider the information described in 50 CFR 424.14(c), (d), and (g) (if applicable).

Our determination as to whether the petition provides substantial scientific or commercial information indicating that the petitioned action may be warranted will depend in part on the degree to which the petition includes the following types of information: (1) Information on current population status and trends and estimates of current population sizes and distributions, both in captivity and the wild, if available; (2) identification of the factors under section 4(a)(1) of the ESA that may affect the species and where these factors are acting upon the species; (3) whether and to what extent any or all of the factors alone or in combination identified in section 4(a)(1) of the ESA may cause the species to be an endangered species or threatened species (*i.e.*, the species is currently in danger of extinction or is likely to become so within the foreseeable future), and, if so, how high in magnitude and how imminent the threats to the species and its habitat are; (4) information on adequacy of regulatory protections and effectiveness of conservation activities by states as well as other parties, that have been initiated or that are ongoing, that may protect the species or its habitat; and (5) a complete, balanced representation of the relevant facts, including information that may contradict claims in the petition. See 50 CFR 424.14(d).

If the petitioner provides supplemental information before the initial finding is made and states that it is part of the petition, the new information, along with the previously submitted information, is treated as a new petition that supersedes the original petition, and the statutory timeframes will begin when such supplemental information is received. See 50 CFR 424.14(g).

We may also consider information readily available at the time the determination is made. We are not required to consider any supporting materials cited by the petitioner if the petitioner does not provide electronic or hard copies, to the extent permitted by U.S. copyright law, or appropriate excerpts or quotations from those materials (*e.g.,* publications, maps, reports, letters from authorities). See 50 CFR 424.14(c)(6), 424.14(h)(1)(ii).

The substantial scientific or commercial information standard must be applied in light of any prior reviews or findings we have made on the listing status of the species that is the subject of the petition. Where we have already conducted a finding on, or review of, the listing status of that species (whether in response to a petition or on our own initiative), we will evaluate any petition received thereafter seeking to list, delist, or reclassify that species to determine whether a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted despite the previous review or finding. Where the prior review resulted in a final agency action – such as a final listing determination, 90-day not-substantial finding, or 12-month not-warranted finding – a petition will generally not be considered to present substantial scientific and commercial information indicating that the action may be warranted unless the petition provides new information or analyses not previously considered. See 50 CFR 424.14(h)(1)(iii).

At the 90-day finding stage, we do not conduct additional research, and we do not solicit information from parties outside the agency to help us in evaluating the petition.

We accept the petitioners' sources and characterizations of the information presented if they appear to be based on accepted scientific principles, unless we have specific information in our files that indicates the petition's information is incorrect, unreliable, obsolete, or otherwise irrelevant to the requested action. Information that is susceptible to more than one interpretation, or that is contradicted by other available information, will not be dismissed at the 90-day finding stage, so long as it is reliable and a reasonable person conducting an impartial scientific review would conclude it supports the petitioners' assertions. In other words, conclusive information indicating that the species may meet the ESA's requirements for listing is not required to make a positive 90-day finding. We will not conclude that a lack of specific information alone necessitates a negative 90-day finding if a reasonable person conducting an impartial scientific review would conclude that the unknown information itself suggests the species may be at risk of extinction presently or within the foreseeable future.

To make a 90-day finding on a petition to list a species, we evaluate whether the petition presents substantial scientific or commercial information indicating the subject species may be either threatened or endangered, as defined by the ESA. First, we evaluate whether the information presented in the petition, in light of the information readily available in our files, indicates that the petitioned entity constitutes a "species" eligible for listing under the ESA. Next, we evaluate whether the information indicates that the species faces an extinction risk such that listing, delisting, or reclassification may be warranted; this may be indicated in information expressly discussing the species' status and trends, or in information describing impacts and threats to the species. We evaluate any information on specific demographic factors pertinent to evaluating extinction risk for the species (*e.g.,* population abundance and trends, productivity, spatial structure, age structure, sex ratio, diversity, current and historical range, habitat integrity or fragmentation), and the potential contribution of identified demographic risks to

extinction risk for the species. We then evaluate the potential links between these demographic risks and the causative impacts and threats identified in section 4(a)(1) of the ESA.

Information presented on impacts or threats should be specific to the species and should reasonably suggest that one or more of these factors may be operative threats that act or have acted on the species to the point that it may warrant protection under the ESA. Broad statements about generalized threats to the species, or identification of factors that could negatively impact a species, alone, do not constitute substantial information indicating that listing may be warranted. We look for information indicating that not only is the particular species exposed to a factor, but that the species may be responding in a negative fashion; then we assess the potential significance of that negative response.

Many petitions identify risk classifications made by nongovernmental organizations, such as the International Union for Conservation of Nature (IUCN), the American Fisheries Society, or NatureServe, as evidence of extinction risk for a species. Risk classifications by such organizations or made under other Federal or state statutes may be informative, but such classification alone will not provide sufficient basis for a positive 90-day finding under the ESA. For example, as explained by NatureServe, their assessments of a species' conservation status do "not constitute a recommendation by NatureServe for listing under the U.S. Endangered Species Act" because NatureServe assessments "have different criteria, evidence requirements, purposes and taxonomic coverage than government lists of endangered and threatened species, and therefore these two types of lists should not be expected to coincide" (*https://explorer.natureserve.org/AboutTheData/DataTypes/ConservationStatusCategories*). Additionally, species classifications under IUCN and the ESA are not equivalent; data standards, criteria used to evaluate species, and treatment of uncertainty are also not necessarily the same. Thus, when a petition cites such classifications, we will evaluate the

source of information that the classification is based upon in light of the standards on extinction risk and impacts or threats discussed above.

Distribution, Habitat, and Life History of West Coast *O. mykiss*

Steelhead is the name commonly applied to the anadromous form of the biological species *O. mykiss*. The present distribution of steelhead extends from Kamchatka in Asia, east to Alaska, and down to the U.S. Mexico border (Busby *et al.*, 1996; 67 FR 21586, May 1, 2002). *O. mykiss* exhibit perhaps the most complex suite of life history traits of any species of Pacific salmonid. They can be anadromous ("steelhead"), or freshwater residents ("rainbow or redband trout"), and under some circumstances yield offspring of the opposite life-history form. Those that are anadromous can spend up to 7 years in freshwater prior to smoltification (the physiological and behavioral changes required for the transition to salt water), and then spend up to 3 years in salt water prior to first spawning. *O. mykiss* is also iteroparous (meaning individuals may spawn more than once), whereas the Pacific salmon species are principally semelparous (meaning individuals generally spawn once and die). Within the range of West Coast steelhead, spawning migrations occur throughout the year, with seasonal peaks of activity. In a given river basin there may be one or more peaks in migration activity; since these "runs" are usually named for the season in which the peak occurs, some rivers may have runs known as winter, spring, summer, or fall steelhead. Steelhead can be divided into two basic reproductive ecotypes, based on the state of sexual maturity at the time of river entry and duration of spawning migration (Burgner *et al.*, 1992). The summer or "stream-maturing" type enters fresh water in a sexually immature condition between May and October, and requires several months to mature and spawn. The winter or "ocean-maturing" type enters fresh water between November and April with well-developed gonads and spawns shortly thereafter. In basins with both summer and winter steelhead runs, the summer run generally occurs where habitat is not

fully utilized by the winter run, or where a temporal hydrologic barrier separates them, such as a waterfall. Summer steelhead usually spawn farther upstream than winter steelhead (Withler, 1966; Roelofs, 1983; Behnke, 1992; Myers *et al.*, 2015).

Olympic Peninsula Steelhead and Previous ESA Status Review

In 1996, NMFS completed a comprehensive status review of coastal and inland steelhead populations in Washington, Oregon, Idaho, and California (Busby *et al.*, 1996). As part of this review, NMFS identified an OP steelhead ESU which "occupies river basins of the Olympic Peninsula, Washington, west of the Elwha River and south to, but not including, the rivers that flow into Grays Harbor on the Washington coast." The OP steelhead ESU is primarily made up of winter-run steelhead but includes several summer-run steelhead populations as well (Busby *et al.*, 1996). NMFS also generally included the resident *O. mykiss* in the ESUs described because of the opportunity for resident to interbreed with anadromous life history forms.

NMFS concluded that the OP steelhead ESU was not in danger of extinction or likely to become endangered in the foreseeable future (Busby *et al.*, 1996). However, NMFS was concerned about the overall health of the ESU and specific populations. Although the majority of abundance trends for winter-run OP steelhead were upward at the time, including for three of the four largest populations, several other populations had downward trends and for three populations this decline was statistically significant. No data were available for adult summer-run OP steelhead trends. NMFS also noted concerns that hatchery fish were widespread, and interbreeding between natural and hatchery fish could reduce the genetic diversity of natural-origin OP steelhead. The estimated proportion of hatchery stocks on natural spawning grounds ranged from 16 to 44 percent, but this proportion was lowest for the two rivers with the largest production of natural-origin steelhead (Queets and Quillayute). Finally, NMFS noted that there was a great deal of uncertainty about the overall health of the ESU because there was little

information known about summer steelhead stocks in the Olympic Peninsula and the amount of interaction between hatchery and natural stocks. Informed by the status review (Busby *et al.*, 1996), NMFS concluded that the OP steelhead ESU did not warrant listing under the ESA (61 FR 41541, August 9, 1996).

A court ruling in 2001 (*Alsea Valley Alliance* v. *Evans*, 161 F. Supp. 2d 1154 (D. Or. 2001)) determined that listing only a subset of a species or ESU/DPS, such as the anadromous portion of *O. mykiss*, was not allowed under the ESA. Because of this court ruling, NMFS conducted updated status reviews for ESA-listed West Coast steelhead ESUs that took into account those non-anadromous populations below dams and other major migration barriers that were considered to be part of the steelhead ESUs (Good *et al*., 2005). Subsequently, NMFS used the joint USFWS-NMFS DPS Policy to delineate steelhead-only DPSs rather than ESUs that included both steelhead and the related non-anadromous forms (71 FR 833, January 5, 2006). OP steelhead were not addressed in the 2005 status review (Good *et al.*, 2005) or subsequent listings (71 FR 833, January 5, 2006).

Analysis of Petition and Information Readily Available in NMFS Files

The Petitioners request that NMFS list OP steelhead as a DPS and present information about the life history of the anadromous form of *O. mykiss*. We interpret the Petitioner's request as asking that NMFS list the anadromous form of *O. mykiss* within the Olympic Peninsula region as a DPS. The petition refers to information from the NMFS 1996 status review indicating that OP steelhead are substantially isolated from steelhead in other regions of western Washington, and are characterized by different habitat, climate, and zoogeography relative to adjacent steelhead populations. Based on the information provided and referenced in the petition, we conclude there is substantial scientific information that OP steelhead may qualify as a DPS pursuant to our DPS Policy. The reader is also referred to previously published **Federal Register** notices for

further discussion of the delineation of *O. mykiss* DPSs under the joint DPS Policy (70 FR 67131, November 4, 2005; 71 FR 834, January 5, 2006).

In the sections that follow, we provide a synopsis of our analysis of the information provided in the petition and readily available in our files regarding OP steelhead status and trends and whether and to what extent factors identified in section 4(a)(1) of the ESA may cause OP steelhead to be an endangered or threatened species.

Status and Population Trends

The Washington Department of Fish and Wildlife (WDFW) and tribal co-managers describe the population structure of OP steelhead for their Salmonid Stock Inventory (SaSI). The Petitioners note that WDFW (in Cram *et al.*, (2018)) describes OP steelhead as consisting of 7 summer-run and 24 winter-run steelhead populations and the Petitioners present information based on this population structure. Most of the information the Petitioners present focuses on the four largest winter-run OP steelhead populations: Queets, Hoh, Quillayute, and Quinault Rivers, but they also present data for summer-run OP steelhead populations in these systems and some smaller winter-run OP steelhead populations.

In support of their claim that OP steelhead are likely to become endangered in the foreseeable future, the Petitioners provide information on the four demographic descriptors that NMFS uses to assess demographic risk in status reviews: abundance, productivity, diversity, and spatial structure (McElhany *et al.*, 2000).

The Petitioners assert that chronic declining trends in abundance and recent sharp declines indicate that OP steelhead are at risk of extinction more so now than at the time of NMFS's 1996 status review (Busby *et al.*, 1996). To support this, the Petitioners summarize multiple past stock assessments for various winter-run OP steelhead populations conducted by WDFW, NMFS, North Olympic Peninsula Lead Entity for Salmon (NOPLE), and the Hatchery Scientific Review Group (HSRG). According to

Cram *et al.* (2018), only 20 percent of the populations of winter-run OP steelhead have an increasing trend for populations where trends could be assessed. The Petitioners note that contemporary summer-run OP steelhead abundance information is lacking, with the exception of snorkel surveys for some summer-run populations.

The Petitioners assert that most winter-run OP steelhead populations have declined from historical abundance relative to present day trends, presenting data from multiple sources. McMillan *et al.* (2022) applied multiple approaches using tribal and sport catch data, catch per unit effort, and watershed size (as a proxy for basin capacity) to generate multiple estimates of historical abundance (for the period 1948-1960). They calculated the mean among these estimates to determine historical abundance for Hoh, Quillayute, Queets, and Quinault Rivers winter-run steelhead. McMillan *et al.* (2022) estimated a historical abundance of 13,505 winter-run steelhead for Hoh River, 21,843 for Quillayute River, 16,897 for Quinault River, and 15,191 for Queets River. McMillan *et al.* (2022) also examined cannery records from 1923 to estimate the abundance of Queets River winter-run steelhead to be 32,223 (ranging from 27,829-43,732, assuming a range of exploitation rates). The Petitioners assert that current mean annual run sizes (averaged from 1978-2020 or 1980-2020) of winter-run OP steelhead populations are 4,117 for Hoh, 13,064 for Quillayute, 5,883 for Quinault, and 7,648 for Queets.

The Petitioners also summarize recently reported trends in abundance from Cram *et al.* (2018) and McMillan *et al.* (2022). Specifically, Cram *et al.* (2018) estimated trends in abundance between 1978 to 2013 of negative 6 percent for the Quillayute River, negative 69 percent for the lower Quinault River, positive 24 percent for the upper Quinault River, negative 29 percent for the Queets River, and negative 16 percent for the Hoh River winter-run steelhead population. McMillan *et al.* (2022) estimated trends for 1980-2017 and found no trend for the Quillayute, a 44 percent declining trend for the lower and upper Quinault combined, a 45 percent declining trend for the Queets, and a 37

percent declining trend for the Hoh River winter-run steelhead populations (Table 1). By comparison, the Petitioners summarize that NMFS's earlier review (Busby *et al.*, 1996) reported percent annual change positive trends of 0.2 percent for the Hoh River, positive 0.9 percent for Queets River, positive 1.8 percent for the Upper Quinault River, negative 2.6 percent trend for Quinault River/Lake Quinault, and a negative 0.2 percent trend for Quillayute/Bogachiel River.

The Petitioners report larger declines in abundance for winter-run OP steelhead comparing older historical estimates (1948-1960) to the more recent time frame (since 1978) versus the more recent time frame alone. The Petitioners report estimated historical abundance from McMillan *et al.* (2022) for years 1948-1960 based on an ensemble of approaches and associated catch data, and compare this to contemporary estimates for years 1978-2017 and 2016-2020. The Quillayute River winter-run steelhead population had a 38 percent decline from historical (1948-1960) to 1978-2017 and 61 percent decline from historical to 2016-2020. The Quinault River winter-run steelhead populations (lower and upper) declines across the two time ranges were 63 percent and 80 percent, respectively. Hoh River winter-run steelhead declines were 69 and 79 percent, respectively. And the Queets River winter-run steelhead population declines were 50 and 69 percent, respectively. Declines were greater if using cannery data to estimate historical abundance.

Table 1--Abundance Trend Estimates Across Different Time Periods for the Four Largest Winter-run OP Steelhead Populations

Winter-run population	Abundance trend 1978-2013 from Cram *et al.* 2018	Abundance trend 1980-2017 from McMillan *et al.* 2022	Abundance trend 1948-1960 compared to 1978-2017 from McMillan *et al.* 2022	Abundance trend 1948-1960 compared to 2016-2020 provided by the Petitioners

Hoh River	-16%	-37%	-69%	-79%
Quillayute River	-6%	No trend	-38%	-61%
Queets River	-29%	-45%	-50%	-69%
Quinault River	-69% (lower) +24% (upper)	-44%	-63%	-80%

The Petitioners also report information on how often winter-run OP steelhead populations have recently met escapement goals to provide evidence of population decline. The Petitioners state that escapement goals are 2,400 fish for Hoh River, 5,900 for a system-wide goal for Quillayute (combining Calawah River, Sol Duc River, Bogachiel and Quillayute River proper, and Dickey River), 1,200 fish for upper Quinault River (none for lower), and 4,200 or 2,500 fish for Queets River (first is set by WDFW, second is used by the tribe). From Cram *et al.* (2018), the Hoh and Queets Rivers only met escapement goals in 50 percent of years while the Quinault and Quillayute Rivers met goals 100 percent (for upper, lower Quinault has no escapement goal) and 90 percent, respectively (for 2004-2013). Updating this for the most recent 10 years (2011-2020), the Petitioners state that two of the four largest winter-run OP steelhead populations have not met escapement goals in half or more of the last 10 years with recent years having low escapement (Queets met the escapement goal 30 percent of 10 years and Clearwater River met the goal 50 percent). Quillayute River on the other hand has met escapement goals in 9 out of 10 most recent years and 18 of the past 20 years. The major Quillayute tributaries of the Dickey and Calawah Rivers have met escapement goals in each of the past 10 years, while Bogachiel/Quillayute and Sol Duc Rivers have met escapement goals in 60 percent and 70 percent of the last 10 years, respectively.

The Petitioners report abundance trends from Cram *et al.* (2018), which, together with Petitioners' updates to escapement trends, provide evidence of declines for smaller winter-run OP steelhead populations (populations other than Quinault, Queets, Hoh, and Quillayute Rivers), as well (Table 2). The Petitioners also summarize older abundance trends for these smaller winter-run OP steelhead populations including from NMFS in 1996 that reported a negative 5.8 percent trend for Pysht River, negative 7.6 percent for Hoko River, negative 4.4 percent for Dickey River, negative 0.1 percent for Sol Duc River, negative 0.5 percent for Clearwater River, and positive trends of 1.1 percent for Calawah River and 13.6 percent for Moclips River winter-run steelhead. From Cram *et al.* (2018), Goodman Creek winter-run had a negative 54 percent long term abundance trend, Salt Creek/independent tributaries had a negative 43 percent trend, negative 27 percent trend for the Clallam River, negative 21 percent for Pysht River/Independent tributaries, negative 40 percent for Hoko River, negative 22 percent for Dickey River, negative 12 percent for Clearwater River, negative 9 percent for Sol Duc River, and then positive trends of 50 percent and 27 percent for Calawah and Moclips Rivers, respectively (see Table 7 in Cram *et al.*, 2018). The Petitioners also assert that certain smaller winter-run OP steelhead populations have rarely met escapement goals in the past decade (see Table 3). The Petitioners assert that Goodman Creek has only met its escapement once in past decade (up to 2020), Salt Creek met its escapement once in last 10 years but the population may have stabilized recently, Pysht River met escapement in 70 percent of last 10 years, and Hoko River met escapement in 80 percent of last 10 years (escapement goal of 400 fish). Based on all the above, the Petitioners assert that winter-run OP steelhead are in chronic decline and that the OP steelhead population is at greater risk of extinction now than at the time of NMFS's last review (Busby *et al.*, 1996).

Table 2--Abundance Trend Estimates Across Different Time Periods and for Smaller Winter-run OP Steelhead Populations

Winter-run population	Abundance trend estimate from NMFS (Busby *et al.*, 1996 – Appendix E)	Abundance trend estimate from WDFW (Cram *et al.*, 2018)
Goodman Creek	Not provided	-54%
Pysht River	-5.8%	-21%
Salt Creek	Not provided	-43%
Hoko River	-7.6%	-40%
Dickey River	-4.4%	-22%
Sol Duc River	-0.1%	-9%
Clearwater River	-0.5%	-12%
Calawah River	1.1%	50%
Moclips River	13.6%	27%
Clallum River	Not provided	-27%

The Petitioners assert that almost all summer-run OP steelhead populations are at critically low levels, while noting that there is no formal analysis of summer-run OP steelhead historical catch and no monitoring by the co-managers. The Petitioners provide rough estimates of peak historical abundance for summer-run OP steelhead based on harvest data for the larger systems (Quinault, Hoh, Quillayute, and Queets). Abundance of summer-run OP steelhead in these systems ranged from 848 to 1,788 adult spawners from the late 1940s/early 1950s to the late 1970s. Using snorkel surveys, Brenkman *et al.* (2012) and McMillan (2022) estimated recent numbers of adult summer-run OP steelhead returning to spawn each year in several different populations (Calawah River system, North Fork Calawah River, South Fork Calawah River, Sitkum River, and South Fork Hoh River for Brenkman *et al.*, 2012; Bogachiel River, Sol Duc River, South Fork Hoh River, East Fork Quinault River, and North Fork Quinault for McMillan, 2022). Mean estimates ranged from 3 to 303 individuals. The Calawah River is at the upper end of this range, but most of the returning adult summer-run OP steelhead are hatchery-origin (89 native-origin, 214 hatchery-origin). For the other rivers, the mean proportion of hatchery-origin spawners ranged from 3 to 43 percent. McMillan (2006) estimated that the Queets River and Clearwater River summer-run OP steelhead abundance is no more than 100

fish based on catch data. Based on the above information, Petitioners assert that summer-run OP steelhead populations are at critically low levels, so much so that summer-run "could be facing extirpation in the near term if some are not already functionally extinct."

The Petitioners also assert that because historical estimates are from a period after habitat changes had already occurred and after the onset of fisheries and canneries, declines are likely greater than those presented above. Any unreported catch would also affect these estimates.

The review of OP steelhead in Cram *et al.* (2018) assessed overall total population viability risk of OP steelhead populations based on four risk metrics (1) long-term abundance trends, (2) short-term decline, (3) risk of extinction, (4) failure to meet escapement goals (using data up to 2013) (see Table 5 in Cram *et al.* 2018). Out of 15 OP steelhead populations for which there was sufficient information to determine risk (out of 31 populations), one population ranked at high overall risk, seven at moderate overall risk, and seven at low overall risk. Cram *et al.* (2018) concluded that overall, low productivity and declines in abundance, "did not appear to pose immediate or substantial threats to this DPS." However, Cram *et al.* (2018) noted substantial data gaps regarding abundance, diversity, and productivity for OP steelhead, which limited the risk assessment to 15 of the 31 populations that were considered.

The Petitioners also summarize available data on population productivity to support claims that productivity is in a long-term decline and that, in combination with depleted abundance, OP steelhead populations are at risk of extinction in the foreseeable future. The Petitioners assert that winter-run OP steelhead populations have increasingly failed to replace themselves based on spawner-to-spawner recruitment, and highlight that smolt-to-adult return rates are negative for at least one population (Cram *et al.*, 2018). The Petitioners assert that winter-run steelhead populations in the Hoh and Quillayute Rivers have failed to replace themselves in 4 of the past 10 years, note there is no clear

trend in smolt-to-adult winter-run return for the Queets River populations, and state that for Quinault River, they could not find estimates of productivity (but assume fisheries co-managers have estimates). The Petitioners also assert that declines in productivity could be a result of fishery, hatchery, or habitat effects or loss of repeat spawners. Finally, the Petitioners note that there is little known about productivity of the summer-run OP steelhead populations, as well as the smaller winter-run OP steelhead populations.

The Petitioners also describe the potential loss of life history diversity. The Petitioners state that little information is known on genetic diversity for natural-origin OP steelhead. The Petitioners assert that declining levels of repeat spawning for winter-run OP steelhead indicate the potential loss of this life history and that this may be one of the factors contributing to declining productivity. The Petitioners also note potential future loss of the summer-run OP steelhead life form and assert the potential loss of the genetic basis for premature migration if these populations are lost. The Petitioners also cite recent work from McMillan *et al.* (2022) that provides evidence of compressed run timing in winter-run OP steelhead. McMillan *et al.* (2022) estimated that the number of days between when 25 percent and 75 percent of the runs had passed in each system declined by 16, 26, and 22 days for the Quillayute, Hoh, and Queets Rivers, respectively, since historical periods (1948-1960 vs. 1980-2017). The Petitioners assert, therefore, that the population's fate is reliant on late-returning winter OP steelhead that may not "keep pace" with environmental factors associated with climate change. Finally, the Petitioners speculate on the impacts of this shift in timing as well as certain habitat barriers (culverts, roads; no large dams in the system) on the spatial structure of OP steelhead.

In sum, while data presented in the petition and readily available in our files on OP steelhead abundance, diversity, and productivity is incomplete, a reasonable person would conclude that the information presented in the petition indicates that many OP steelhead populations likely have declined.

Analysis of ESA Section 4(a)(1) Factors for Olympic Peninsula Steelhead

The Petitioners assert that all five ESA section 4(a)(1) factors contribute to the need to list OP steelhead as threatened or endangered, but point to main threats of declining freshwater and marine habitat and recreational and commercial fishing pressure. The Petitioners also note that a recent WDFW review (Cram *et al.*, 2018) listed key threats for OP steelhead as habitat degradation (from forestry practices) and potential impacts from hatchery and harvest. Each of the five ESA section 4(a)(1) factors is discussed in detail below.

The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

For OP steelhead habitat, most of the major river basins occupied by OP steelhead originate within the Olympic National Park (ONP) where habitat is protected from most detrimental land-use practices such as logging, but drainage areas for these river systems extend outside of the park and were or are subject to logging and other land-use practices. Though the Petitioners note that forest management outside of ONP lands has improved, including logging practices on state, Federal, and private lands, the Petitioners assert that habitat degradation is a threat to OP steelhead due to historical and ongoing logging and land-use practices (including road and culvert construction). For reference, according to the petition, 57 percent of the Hoh River watershed, nearly one-third of the Quillayute River basin, 47 percent of the Quinault River basin, and nearly all of the course of the Queets River (except the lower 8 miles) occur inside the ONP (see petition for breakdown for other rivers or areas). The Petitioners summarize that logging has altered stream flows and hydrology, road construction has led to erosion and increased sedimentation, and culverts have blocked access to various spawning grounds and habitat and impacted sedimentation and wood recruitment processes. Although efforts are underway to address these issues, it may take decades for habitat to recover (Martens *et*

al., 2019) and climate change may exacerbate conditions (Wade *et al.*, 2013). The Petitioners assert that climate change is and will further degrade habitat both inside and outside of the ONP (see section on *Other Natural or Manmade Factors Affecting Its Continued Existence* for discussion on climate change).

Cram *et al.* (2018) stated that legacy effects of historical land-use practices, especially past extensive clear-cut logging, continue to threaten natural-origin steelhead on the Peninsula. Cram *et al.* (2018) note that although many of the large rivers begin within ONP, lower areas are subject to logging outside of the park boundaries. Cram *et al.* (2018) also note that extensive logging coupled with construction has led to increased sediment loads and a reduction in large woody debris in the Clearwater River basin (which has headwaters outside of the ONP). However, improvements have been made in the Hoh River basin, where recent land acquisitions (approximately 90 percent of the basin is now owned by state and Federal government or conservation organizations) and subsequent efforts to restore and protect habitat has led to various stages of regeneration across the Hoh River valley rainforest (Cram *et al.*, 2018).

The Petitioners summarize current status of habitat for the Water Resource Inventory Areas (WRIAs) that overlap with OP steelhead (areas 19-21), mainly for areas outside of the ONP. Washington State Department of Ecology (WDOE) developed WRIAs to delineate major watersheds within Washington and manage activities. The Petitioners summarize that in a previous review, WRIA 20 had an overall salmonid habitat rating of "poor-fair," including "poor" water temperature, side channel floodplain, sediment quantity and quality, bank/streambed stability, instream woody debris, and riparian, "fair" road density and hydro high flows, and only pool habitat rated "good" (Smith, 2005). The Petitioners further summarize threats within individual rivers within this inventory area, which include warm temperatures, low summer stream flows, landslides, passage blockages, flooding, increased fine sediment, debris flows resulting in

the scouring of spawning gravels, and poor riparian conditions, amongst other things. For the portion of WRIA 21 that is outside of ONP, the Petitioners summarize that this area was subject to timber harvest and that there is excessive sedimentation, poor conditions for water temperature and side-channel floodplain, and fair conditions for pool habitat, instream large woody debris, and riparian habitat (citing multiple references). For WRIA 19, the Petitioners state that this area has been subject to logging practices and a large percent of the old growth area has been converted to tree farms (citing McHenry *et al.*, 1996). Smith (2005) also rated multiple habitat attributes as being in "poor" condition in this WRIA. The Petitioners also describe past and current forest practices, including past logging within the Olympic National Forest (Olympic NF), and assert that though management has improved, the impacts of past practices are still effecting OP steelhead habitat.

The Petitioners further assert that the impacts of past and current logging harm OP steelhead through increasing water temperatures and sedimentation, removing woody debris, altering stream flows, and impacting habitat connectivity. The Petitioners cite Hicks (1999), stating that high water temperatures can cause mortality, metabolic distress, alter disease susceptibility, change migration and breeding times, and can form temperature barriers to migrating fish. The Petitioners summarize that logging has resulted in increased sedimentation and landslides within the region, and that this can reduce prey availability, block habitat access, suffocate early life stages like eggs and fry, impact respiratory function, and increase water temperature (citing McHenry *et al.*, 2016, USFWS, 2020). Also, the Petitioners state that loss of woody debris from logging can result in less habitat cover and less rearing and refuge habitat. Finally, the Petitioners assert that logging roads and culverts have decreased or blocked access to available habitat.

According to the Petitioners, many rivers and streams in WRIA 19-21 do not meet state temperature standards and certain rivers and streams also do not meet dissolved oxygen and/or pH standards (WDOE, 2016). Hundreds of culverts within WRIAs 19-21 also may be creating migration barriers, though some work is ongoing to repair or replace culverts. Based on information provided by the Petitioners and readily available in our files, we find that habitat degradation may be posing a threat to the continued existence of OP steelhead.

Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The petition identifies overutilization for commercial and recreational purposes as a main threat to OP steelhead. The fisheries are mainly managed through escapement goals for OP steelhead winter-runs, which were set based on maximum sustainable harvest. According to WDFW's review, OP steelhead has sustained the highest harvest rate among Washington state steelhead populations with an annual harvest rate of 25.6 percent (Cram *et al.*, 2018). WDFW also notes that harvest rate estimates were only available for one-third of the OP steelhead populations with escapement data and three additional river systems with combined population escapement (Cram *et al.*, 2018). The Petitioners assert that using escapement goals based on maximum sustainable harvest does not provide enough detail to "responsibly manage harvest or maintain the persistence of the species" and question whether or not current management targets are sustainable based on high harvest rates stated in Cram *et al.* (2018) and declining abundance. Cram *et al.* (2018) also stated concerns about the high harvest rates given recent declines and limited availability of monitoring data. In recent years, WDFW has shortened or closed the recreational fishing season on winter-run OP steelhead at least in part due to low returns. WDFW also imposed restrictions on recreational angling by banning the use of boats and bait (see the following*: https://wdfw.medium.com/changes-to-the-coastal-steelhead-season-67131dd05ba7; https://wdfw.medium.com/frequently-*

asked-questions-march-2022-coastal-steelhead-closure-364cfa62826f; https://www.peninsuladailynews.com/sports/fishing-olympic-national-park-to-shut-down-fishing-on-west-end-rivers/).

The Petitioners also report results from their analysis (provided in the petition, Appendix A from N. Gayeski, *https://www.fisheries.noaa.gov/endangered-species-conservation/candidate-species-under-endangered-species-act*) estimating productivity and abundance capacity/equilibrium abundance over time in order to support their assertion that managing for maximum sustainable harvest or yield is not sustainable. Using data on spawner returns and juvenile recruits from WDFW and a Ricker stock-recruit model, the Petitioners estimate productivity and unfished equilibrium abundance overtime for Hoh River and Quillayute River winter-run steelhead. These analyses show fairly steady declines in both productivity (alpha parameter) and equilibrium abundance from 1986 to 2014 for both populations.

The Petitioners further summarize current information and data on harvest impacts for the winter-run OP steelhead that are harvested in Tribal fisheries and non-Tribal recreational fisheries. The Petitioners report that mean harvest rates for the four largest winter-run OP steelhead populations (Quillayute, Hoh, Queets, and Quinault Rivers) between the late 1970s/early 1980s to 2020 were 28, 35, 35, and 46 percent, respectively; and ratios of hatchery to natural-origin fish vary from 0.7:1 to 4.7:1 depending on the river system and specific fishery. Tribal fishers catch natural-origin OP steelhead throughout their fishing seasons. In 2016, WDFW changed the recreational fishing regulations to prohibit retention of natural-origin winter-run steelhead in OP steelhead river basins. The number of natural-origin OP steelhead that are captured and released is calculated by WDFW via creel surveys, and it is estimated that catch and release has a 10 percent mortality rate. However, the Petitioners assert that OP steelhead

are potentially being caught and released more than once, for which mortality rates are unknown.

The Petitioners further support their assertion that the winter-run OP steelhead populations are over-utilized by summarizing recent failures to meet harvest management escapement goals. The Petitioners summarize the proportion of years that harvested natural-origin OP steelhead met their escapement goals both from Cram *et al.* (2018) and updated for more recent years, and assert that many populations are failing to meet escapement goals (see the **Status and Population Trends** section).

In the case of summer-run OP steelhead, the Petitioners note that current tribal catch is low and that retention of natural-origin summer-run OP steelhead by recreational anglers has been prohibited for several decades (since the 1990s). Petitioners provide time-series of catch data for the late 1970s to 2020 for summer-run OP steelhead but note that in certain years, hatchery fish were not marked, making it difficult to distinguish between hatchery-origin and natural-origin fish. The Petitioners also assert that harvest of natural-origin summer-run OP steelhead occurred in the Quillayute River through 2006 (based on WDFW records) though catch and release was implemented beginning in 1993, and the Petitioners assert that the data possibly represents illegal harvest but they are uncertain. Where they could distinguish natural-origin from hatchery-origin fish, historical recreational mean annual harvest of natural-origin summer-run OP steelhead ranged from 8 to 54 (1985-2006) across Queets, Quillayute, Hoh, and Quinault Rivers. Harvest of hatchery-origin summer-run OP steelhead ranged from 15 to 673 fish (years 1986-2016). However, the Petitioners assert that prior to 1986, hatchery fish were not marked and harvest of summer-run OP steelhead was higher in the Quillayute (in the low thousands), Hoh, and Queets (in the hundreds) river basins. The Petitioners summarize tribal summer-run OP steelhead harvest, but were unable to distinguish between hatchery-origin and natural-origin fish for Quillayute, Queets, Hoh, and Quinault Rivers.

The mean annual harvest in those rivers was in the low hundreds, but higher for Quinault, although the Petitioners question if some of that harvest may include winter-run kelts (steelhead that survived spawning and return to the ocean). Though this harvest may be relatively low, the Petitioners emphasize that summer-run OP steelhead have less monitoring, low abundance, and lack escapement goals.

Finally, the Petitioners discuss how overutilization may be reducing OP steelhead life history diversity, putting the population at further risk. Both the Petitioners and Cram *et al.* (2018) summarize that harvest may be effecting the diversity of sizes, ages, and run-timing. Analysis of scale samples indicated that Tribal fisheries harvested more of the older fish, whereas the recreational fisheries harvested more of the younger fish (Cram *et al.*, 2018). The Petitioners also assert that since the number of treaty fishing days per week declines throughout the season, this has resulted in greater harvest of the fish that return in the early part of the run (Cram *et al.*, 2018), and could result in a shortened breeding season, reduced productivity, reduced diversity, and a reduction in the adaptive capacity with changing climate. Finally, the Petitioners express concern about fishing impacts to rates of iteroparity (rate of fish that spawn more than once) in OP steelhead and assert that fisheries targeting Chinook salmon (with incidental harvest of steelhead) and Tribal fisheries for steelhead in the spring and summer could be impacting kelts that might otherwise come back to spawn. They speculate that declines in rates of iteroparity are contributing to OP steelhead population declines.

Based on information provided by the Petitioners, as well as information readily available in our files, we find past and future harvest may be posing threats to the continued existence of OP steelhead.

Disease or Predation

The Petitioners assert that disease and predation pose a risk to natural-origin steelhead on the Olympic Peninsula. The Petitioners cite work by Breyta *et al.* (2013)

summarizing detections of the genogroup (group of related viruses) of infectious hematopoietic necrosis virus (IHNV) that causes high levels of mortality in steelhead and rainbow trout, in the Hoh, Queets, Quinault, and Quillayute river basins between 2007 to 2011. Though most detections were in hatchery-origin fish, Breyta *et al.* (2013) note that although natural-origin fish are less commonly sampled, there were detections of this virus in natural-origin fish in the Hoh and Quinault river basins. No IHNV was detected in 2012, but the future risk of IHNV in OP steelhead is unknown given known fluctuations of IHNV incidences in other regions (like Columbia River basin) (Breyta *et al.*, 2013). Although virus outbreaks are concerning, the extent to which natural-origin OP steelhead may be threatened by future outbreaks is not clear based on the information in the petition or otherwise readily available.

The Petitioners assert that there is increased distribution of predators in the Dickey River basin likely from increased temperatures, citing Smith (2000), and that predation risk will likely increase with decreasing stream flow and increasing water temperature (citing Dalton *et al.*, 2016). However, information to substantiate the extent that OP steelhead in particular will be threatened by increased predation is not provided and is not readily available in our files.

Inadequacy of Existing Regulatory Mechanisms

The Petitioners also explain that existing regulatory mechanisms have inadequately protected and restored ecosystems that OP steelhead depend on, and is therefore a threat to OP steelhead. The Petitioners assert that the National Forest Management Act, including the associated Northwest Forest Plan and Aquatic Conservation Strategy (ACS) and Land and Resource Management Plan (LRMP) for the Olympic NF under the U.S. Forest Service (USFS), have not led to anticipated restored sediment regimes (under which OP steelhead evolved) and they could not find evidence of increased anadromous fish production, as the 1990 USFS LRMP claimed would occur.

Also, they assert that even with the ACS, Olympic National Forest Strategic Plan, and Road Management Strategy, there are still hundreds of miles of road that pose a threat to fish in the Olympic NF, like OP steelhead, and other aquatic resources (though 435 miles [700.1 km] have been decommissioned). Furthermore, riparian corridors have not been reestablished with conifers, which would contribute woody debris to adjacent stream channels. The Petitioners also question if USFS has included anything in the ACS in response to climate change, and broadly assert that the U.S. Government has failed to adequately address climate change. Finally, the Petitioners discuss how Washington is not meeting EPA water quality standards for many rivers and streams in OP steelhead habitat and assert that the Clean Water Act is failing to protect steelhead because discharge and runoff from logging is not being adequately regulated.

The Petitioners include information on protections afforded to other ESA-listed species in the Olympic Peninsula region that could benefit OP steelhead, and assert that the current status of OP steelhead indicates these are not sufficient. Multiple rivers and streams where OP steelhead occur have been designated as bull trout critical habitat (75 FR 63875-63978, October 18, 2010). Listed species like bull trout, marbled murrelets, and Northern Spotted Owl occur on the peninsula, and the USFWS has conducted biological opinions for Federal actions in this region, including for the Forest Management Activities in the Olympic NF. However, the Petitioners note that even with conservation measures in place stemming from the biological opinions and recommended by USFWS, the USFWS still anticipates adverse effects to bull trout critical habitat.

The Petitioners also discuss state regulatory mechanisms that can impact OP steelhead habitat. The Washington Department of National Resources Trust Lands (DNR) Habitat Conservation Plan (HCP), including its Riparian Forest Restoration Strategy, has habitat protections for riparian buffers and wetland protections, but the Petitioners assert that loss of woody debris and increased water temperatures is still

occurring. The Washington State Forest Practices (FP) HCP also includes habitat protections from forestry impacts, but the Petitioners assert that NMFS and USFWS have voiced concerns that Washington Department of Natural Resources (WDNR) has not adequately followed water typing (not correctly identifying fish habitat) and monitoring described in the FP HCP (the Petitioners cite a Letter from Kim Kratz, Assistant Regional Administrator, NMFS, and Eric V. Rickerson, State Supervisor, USFWS, to Peter Goldmark, Commissioner of Public Lands, DNR (July 2, 2015)).

The Petitioners also provide information on the National Environmental Policy Act (NEPA), which requires federal agencies to assess impacts of major actions and action alternatives on the environment. According to the Petitioners, because there is no requirement that Federal agencies pick the alternative with the least impact, NEPA is inadequate to protect OP steelhead. The State Environmental Policy Act (SEPA) has similar requirements at the state level.

The Petitioners further assert that because OP steelhead are in decline, that state plans in Washington like the Statewide Steelhead Management Plan and Hatchery and Fishery Reform Policies, as well as Harvest Management Plans with the Tribes, are not adequate to protect OP steelhead. The Petitioners assert that the Steelhead Management Plan says WDFW should maintain escapement objectives above or at maximum sustainable harvest for populations with status of "healthy," but they assert that assessment of status is nearly two decades old for OP steelhead and recent escapement data shows WDFW is not maintaining this escapement. They also assert that under the Steelhead Management Plan, more gene banks should have been established to protect populations of OP steelhead. In addition, the Petitioners discuss general fishery management by the state and the impact of fisheries to OP steelhead (see *Overutilization for Commercial, Recreational, Scientific, or Educational Purposes* section).

Petitioners also discuss the inadequacy of hatchery regulatory mechanisms in Washington State. The Petitioners identify the 2009 Hatchery and Fishery Reform Policy adopted by the Washington Fish and Wildlife Commission (WFWC), and note that after a SEPA review of this policy, Hatchery Action Implementation Plans were to be developed for each hatchery facility. The Petitioners assert that to their knowledge these plans were never developed or implemented. The 2009 Hatchery and Fishery Reform Policy outlined multiple guidelines for WDFW hatchery management including to "Use the principles, standards, and recommendations of the Hatchery Scientific Review Group (HSRG) to guide the management of hatcheries operated by the Department." The HSRG was an independent scientific panel that reviewed Pacific Northwest hatcheries and developed recommendations for reform. The HSRG completed its work in 2021. Subsequent review of the 2009 policy (Murdoch and Marston, 2020), according to the Petitioners, found various issues, including that there was inadequate information to assess the policy's effectiveness at protecting wild salmonids, that implementation of certain guidelines was prevented due to lack of funding, that there is a lack of state-wide monitoring, and that there is missing data collection and analysis for adaptive management. The Petitioners state that the same review (Murdoch and Marston, 2020) found that little progress had occurred in implementing HSRG recommendations for hatcheries on the Bogachiel River on the Olympic Peninsula. WDFW recently replaced the 2009 hatchery policy with new policy, but the Petitioners assert that the new plan "abandons commitments to follow HSRG guidelines," did not undergo SEPA review, is currently under litigation, and is behind schedule in implementation.

On the other hand, the Petitioners note that within the ONP, mechanisms like the National Park Service Organic Act, fishing regulations (catch and release, recent closures), and actions taken by the National Park Service to reduce impacts of construction and maintenance, have helped protect OP steelhead and their habitat.

However, based on information provided by the Petitioners and information readily available in our files, we find that existing regulatory mechanisms for areas primarily outside of the ONP may not be adequate to address habitat modification and curtailment, overutilization, or other anthropogenic factors (hatcheries) that may be affecting OP steelhead.

Other Natural or Manmade Factors Affecting Its Continued Existence

The Petitioners provide information on three other natural or manmade factors that they assert are affecting the continued existence of OP steelhead: hatcheries, climate change and ocean conditions, and loss of nutrients.

The Petitioners cite concerns about potential effects of hatchery production on OP steelhead. In its 1996 review, NMFS noted that past hatchery practices and practices at the time of the review were a major threat to the genetic integrity of OP steelhead. The recent review of OP steelhead from WDFW (Cram *et al.*, 2018) also named hatchery operations as "a threat to genetic integrity of wild steelhead populations" in the area occupied by OP steelhead. Cram *et al.* (2018) stated that, as of 2014, there were 11 hatchery programs on the Olympic Peninsula with an average annual release of 1,393,022 smolts from 2000 to 2008 and 1,072,781 from 2009 to 2013. Most hatchery programs (10 of 11) are used for harvest augmentation and most of these use stock from two steelhead populations not native to the Olympic Peninsula – Chambers Creek early winter and Skamania early summer (the use of which is being eliminated elsewhere on the West Coast due to impacts on listed steelhead, see Ford *et al.*, 2022). Of the hatchery programs in the Olympic Peninsula, five are off-site release programs that transfer smolts from their natal hatchery to another watershed for release. Cram *et al.* (2018) notes that if adults from these programs are not caught by fisheries, they place natural-origin OP steelhead at risk genetically and ecologically. As of 2013, an integrated hatchery program was initiated in the Bogachiel River, while the program on the Sol Duc River ended and

steelhead there are now protected from hatchery influence by the river's designation as a "Wild Steelhead Gene Bank" (Cram *et al.*, 2018).

The Petitioners assert that straying of hatchery-origin steelhead, and the associated interbreeding and competition between natural-origin and hatchery-origin steelhead on the Olympic Peninsula, are presenting genetic risks to natural-origin OP steelhead. The Petitioners also assert that the harvest of early-running hatchery-origin steelhead on the Olympic Peninsula is contributing to depletion of early returning native-origin OP steelhead. The Petitioners cite multiple studies that report the straying of hatchery steelhead into rivers and streams occupied by natural-origin OP steelhead. However, the Petitioners note that little data is available to quantify straying of hatchery winter-run steelhead and assert that some of the hatcheries in the Queets River basin and one hatchery in the Quinault River basin do not mark hatchery fish, which makes it difficult to discern hatchery-origin from natural-origin fish. Based on snorkel surveys by Brenkman *et al.* (2012) and McMillan (2022), the Petitioners assert that there is substantial straying of summer hatchery-origin steelhead into summer-run OP steelhead watersheds that do not have hatchery programs, and straying within the same system of release, but outside of release location (the proportion of hatchery-origin fish ranged from 0 to 100 percent depending on the river/stream and year). Weirs and adult traps can be used to capture hatchery-origin fish, but the Petitioners note a lot of uncertainty about whether or not these are in use. The Petitioners conclude that straying of hatchery-origin fish threaten the genetic integrity of OP steelhead, and pose a great risk to summer-run OP steelhead given their low abundance.

Where hatchery-origin and natural-origin steelhead co-occur on the Olympic Peninsula, there is concern about genetic introgression due to interbreeding, which NMFS stated as a risk to OP steelhead in the 1996 status review (Busby *et al.*, 1996). Estimates of the proportion of naturally spawning steelhead that were of hatchery-origin

ranged from 16 to 44 percent, but with the largest runs (Queets and Quillayute) having the lowest proportions of hatchery-origin spawners (Busby *et al.*, 1996). The Petitioners cite the Washington Coast Sustainable Salmon Plan (2013) for more recent proportions of natural-origin winter-run OP steelhead spawners. This indicates, assuming that the rest are hatchery-origin, that the Sooes/Waatch Rivers, Goodman Creek, Quinault River estimated proportions of hatchery-origin are as much as 50 percent. However, the Dickey River, Klalaloch Creek, Clearwater River, Moclips River, and Copalis River hatchery-origin steelhead proportions are only 0-5 percent. Additionally, a 2008 WDFW report cited by the Petitioners reported gene flow of Chambers Creek hatchery stock to Hoko, Pysht, and Sol Duc River winter-run steelhead of 5.5 to 14.5 percent, 12 to 75 percent, and 2.5 to 6 percent, respectively. The Petitioners assert that offspring of hatchery-origin spawners or hybrid offspring may then compete with natural-origin offspring for food and habitat.

The Petitioners also assert that hatchery practices have contributed to a compression of the run timing of winter-run OP steelhead. Specifically, the Petitioners note that the amount of open treaty fishery days per week is highest earlier on in the fishing season to target hatchery returning steelhead, and earlier returning fish remain in the system for longer periods. Thus, recreational fisheries (catch and release) may catch early-returners multiple times. This may contribute to the compressed run-timing of OP steelhead shown in McMillan *et al.* (2022). With the potential for greater early-winter peak flows and more intense summer temperatures in association with climate change, the Petitioners assert that spawning and rearing conditions in the future may be more ideal earlier in the season, but that hatchery and fishery practices with selection of late run timing are "blocking the potential for adaptations in migration timing" for OP steelhead.

The Petitioners assert that climate change impacts in both the marine environment and in the terrestrial/freshwater environment will adversely impact OP steelhead. An assessment by the USFS on climate change impacts in the Olympic NF and ONP, indicated declines in freshwater habitat quantity and quality for OP steelhead (Halofsky *et al.*, 2011).

The Petitioners, citing multiple assessments, summarize the potential effects of climate change on freshwater habitats and potential impacts to OP steelhead. Specifically, the Petitioners summarize that climate change on the Olympic Peninsula has or will increase air temperature, melt glaciers, reduce snowpack, decrease summer precipitation, increase precipitation at other times of the year, decrease summer stream flow, increase winter flooding, increase water temperature, and increase sediment pollution. Halofsky *et al.* (2011) stated that for steelhead, generally, because of their long freshwater residency, are likely more sensitive to climate change effects in freshwater habitats than certain other salmonids (like ocean-type Chinook, pink, or chum salmon). In a separate assessment by the Oregon Climate Change Research Institute (Dalton *et al.*, 2016), the authors note that based on studies in western Washington, changes in water temperature and stream flow are the main factors associated with climate change that will impact salmon and steelhead (Wade *et al.*, 2013). The Petitioners summarize multiple potential adverse effects to OP steelhead from these two primary factors due to exposure on the Olympic Peninsula. They assert (citing various assessments including Dalton *et al.*, 2016 and Halofsky *et al.*, 2011) that low summer flows will lead to less cold water and holding pools for migrating adult OP steelhead and thereby potentially lowering reproductive success; increased winter flow that could reduce survival of early life stages of steelhead, displace juveniles, and reduce slow-water habitat for juveniles (which could impact survival); and high water temperatures that may impact the smoltification process and growth. Dalton *et al.* (2016) also summarized work showing that water temperature may

impact the expression of resident vs. anadromous life history. However, the Petitioners note that OP steelhead may also realize some benefits from climate change, such as increased food web productivity and expanded growing seasons (summarized in Halofsky *et al.*, 2011).

The Petitioners summarize that, in the marine environment, climate change may impact sea surface temperature, upwelling, ocean acidification, and dissolved oxygen (resulting in anoxic and hypoxic events), potentially negatively affecting steelhead survival in the Pacific Northwest. The Petitioners note that NMFS stated in a recent review (Ford, 2022) that cyclic ocean conditions will likely be disrupted by climate change resulting in more low productivity years for salmonids. In general, salmonid abundance is correlated with decadal-scale environmental variability. The Petitioners assert that it is unclear if salmonids will continue to persist with shifts in marine conditions in combination with other threats. The Petitioners assert that climate change in the marine environment will likely also reduce forage fish prey for steelhead generally. Finally, a study by Abdul-Aziz *et al.* (2011) predicted an 8 to 43 percent contraction of steelhead species' marine habitat due to climate change between the 2020s and 2080s.

As an additional threat, the Petitioners assert that the loss of marine-derived nutrients from declines of other salmonids in Olympic Peninsula rivers is likely limiting OP steelhead productivity through impacts to smolt survival. Information on whether, how, and to what extent nutrient declines are impacting OP steelhead specifically was limited.

Based on information provided by the Petitioners and information readily available in our files, we find that hatcheries and climate change may be posing threats to the continued existence of OP steelhead.

Petition Finding

After reviewing the information in the petition, the literature cited in the petition, and other information readily available in our files, we find there is substantial scientific and commercial information indicating that the petitioned action to list OP steelhead as a threatened or endangered DPS under the ESA may be warranted. Therefore, in accordance with section 4(b)(3)(A) of the ESA and NMFS' implementing regulations (50 CFR 424.14(h)(2)), we will commence a status review to determine whether OP steelhead constitute a DPS, and, if so, whether OP steelhead is in danger of extinction throughout all or a significant portion of its range, or is likely to become so within the foreseeable future throughout all or a significant portion of its range. As required by section 4(b)(3)(B) of the ESA, within 12 months of the receipt of the petition (August 1, 2023), we will make a finding as to whether listing the OP steelhead DPS as an endangered or threatened species is warranted. If listing is warranted, we will publish a proposed rule and solicit public comments before developing and publishing a final rule.

Information Solicited

To ensure that our status review is informed by the best available scientific and commercial data, we are opening a 60-day public comment period to solicit comments and information on OP steelhead. We request information from the public, concerned governmental agencies, Native American tribes, the scientific community, agricultural and forestry groups, conservation groups, fishing groups, industry, or any other interested parties concerning the current and/or historical status of OP steelhead. Specifically, we request information regarding: (1) species abundance; (2) species productivity; (3) species distribution or population spatial structure; (4) patterns of phenotypic, genotypic, and life history diversity; (5) habitat conditions and associated limiting factors and threats; (6) ongoing or planned efforts to protect and restore the species and their habitats; (7) information on the adequacy of existing regulatory mechanisms, whether protections are being implemented, and whether they are proving effective in conserving the species;

(8) data concerning the status and trends of identified limiting factors or threats; (9) information on targeted harvest (tribal, commercial, and recreational) and incidental harvest of the species; (10) other relevant new information, data, or corrections including, but not limited to, taxonomic or nomenclatural changes; (11) information concerning the impacts of environmental variability and climate change on survival, recruitment, distribution, and/or extinction risk; and (12) information on interactions or relationships between different steelhead life history forms in the Olympic Peninsula, such as anadromous and resident steelhead, or between hatchery-origin and natural-origin steelhead.

We request that all information be accompanied by: (1) supporting documentation such as maps, bibliographic references, or reprints of pertinent publications; and (2) the submitter's name, and any association, institution, or business that the person represents. Please send any comments in accordance with the instructions provided in the **ADDRESSES** section above. We will base our findings on a review of the best available scientific and commercial information available, including all information received during the public comment period.

References

A complete list of all references cited herein is available upon request (See **FOR FURTHER INFORMATION CONTACT**).

Authority: The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: February 6, 2023.

Samuel D. Rauch, III,

Deputy Assistant Administrator for Regulatory Programs,

National Marine Fisheries Service.

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